



# A Conversation on Interdisciplinary Collaboration

*with Ivica Ico Bukvic, Elaine Martyn, Bill Sherman and Srinija Srinivasan*

a2ru Emerging Creatives Student Conference  
Stanford University, January 30—February 1, 2014



**Ivica Ico Bukvic, Intermedia Composer and Associate Professor in Music Technology, Virginia Tech**

The art of multisensory artist Ivica Ico Bukvic is driven by ubiquitous interactivity. His most recent work focuses on communal interaction, integrating contemplative practice, and improving health through innovative approaches to the Arts and technology. At Virginia Tech, Dr. Bukvic is the founder and director of the Digital Interactive Sound and Intermedia Studio (DISIS) and World's first Linux Laptop Orchestra (L2Ork), Institute for Creativity, Arts, and Technology (ICAT) Integrative Mind & Performance Through the Arts, Creativity, and Technology (IMPACT) Studio Head, a member of the Center for Human-Computer Interaction (CHCI), and as a faculty member in the Computer Science department.



**Elaine Martyn, Vice President of Development, Global Fund for Women**

Committed to women's empowerment through high-level, dynamic fundraising, Elaine Martyn has lead efforts to build the philanthropic community in the UK, US and Asia. Her career has centered on the advancement of human rights through medical education, social justice, diversity policy, and advocacy using fundraising and political action. Prior to joining Global Fund, she lead the development team at Refugees International in Washington DC. She also served as Head of Research Grants and Trusts at the British Medical Association. She double majored in Medical Studies and English Literature and Communications at Gannon University, and has a Master's degree in Victorian Literature from the University of Leeds.



**Bill Sherman, Founding Director of OpenGrounds, Associate VP for Research, and Professor of Architecture, University of Virginia**

As an architect and educator, Bill Sherman's teaching and design research examine dynamic cultural and environmental processes in architectural design, ranging in scale from human physiology to global energy flows. He teaches studios and courses ranging in focus from sustainable buildings and cities to the design of spaces that encourage the teaching and practice of innovation across disciplinary boundaries. His work has been published internationally and has received numerous awards, including six from the American Institute of Architects. OpenGrounds provides places and programs that inspire creative research at the confluence of technology, science, the arts and humanities, serving as catalysts for cross-disciplinary research collaborations and new institutional partnerships to inspire the conception, development and implementation of transformational ideas.



**Srinija Srinivasan, Co-Founder of The Loove/former VP, Editor in Chief at Yahoo! Inc.**

Srinija Srinivasan is co-founder of The Loove, a developing facility in Brooklyn, NY dedicated to promoting a transparent, artist-centric, community-based paradigm for the production, presentation, and equitable distribution of creative music. In 2010, she stepped down from Yahoo! Inc. as Vice President, Editor in Chief after a 15-year tenure with the company. Since joining Yahoo! as its fifth employee in 1995, Srinivasan led a range of editorial and policy functions globally, beginning with the organization and evolution of the Yahoo! Directory. Prior to joining Yahoo!, she was involved with the Cyc Project, a ten-year artificial intelligence effort to build an immense database of human commonsense knowledge. In 2010, she was appointed by President Obama to the Commission on Presidential Scholars. She holds a B.S. with distinction from Stanford University in Symbolic Systems.

*The following transcript is amended from the original recording for readability.*

**Lauren Fretz, a2ru Education Specialist:** Srinija, I'd like for you to start off the conversation this morning. What has been your experience working with colleagues from other disciplines or backgrounds?

**Srinija Srinivasan:** It's an interesting question because it's hard for me to think of anything of substance or fruit that I've participated in that hasn't been interdisciplinary; that hasn't been a collaboration of diverse, even divergent, people and perspectives. And I don't think that's because I'm unique, I think it's because people are people. So, at some point, I remember having a thought early on in Yahoo! that if you want to be a part of something bigger than yourself, you've got to join forces with other humans. And that's a bit of a sobering, maybe depressing thought at first, and then it becomes really enlivening. Because I think that all of the biggest challenges are rooted in the fact that we each come with a set of experiences that informs a perspective, point of view, our idiosyncrasies, insecurities (and insecurities and insecurities), agendas, beliefs, and each of us has greater and lesser degrees of awareness of these things, and greater and lesser degrees of attachments to these things. So, collaboration of any kind is intrinsically interdisciplinary for that reason, and it seems to be that collaboration among different people is a kind of metaversion of creativity in myself. For me to have a breakthrough of some kind means to acknowledge something that I was taking for granted, or wasn't seeing, or wasn't open to, and if we take that to a kind of 'interhuman' level, that's where that magic comes from. It's a sort of systemic, institutionalized creativity, but it does hinge or depend on each participant shedding something, offering something.

**Bill Sherman:** As an architect, you put together collaborations to do a building or design something, and there's a big difference between a specific goal-oriented collaboration which means you know the kind of group you need to accomplish a certain task, and the kind where there might be a shared interest but the goals are uncertain or unknown, and where the goals actually emerge out of the collaboration. That's the kind of collaboration that we're trying to work on at OpenGrounds, but it opens up a whole different way that people interact because

they're exploring and roving unknown territory rather than coming in with pre-defined roles in a job that they know they have to do. That's one of the reasons that this is so exciting, the way that this conference is put together here.

But there's one story that came out of OpenGrounds, which is this place where people come together. There's a well-known psychologist at the University of Virginia that studies the brain and his recent work has been on trying to understand what it is about working in a group, or people being together in a group in the way the brain functions that's different than the way people are when they're by themselves. His name is Jim Cohen and he has a lab that's been working on this, and what they've discovered—and people may know this, is that there's a limited capacity in the pre-frontal cortex and we parse out that space based on what we're doing. Through a whole series of tests and experiments, they figured out that when we're in a group, and there's a certain level or perception of safety in the room, a piece of the pre-frontal cortex that is used to staying vigilant for danger (which goes way back in our early evolution) stops having to work and it opens up that space. So we are literally smarter when we're in a group, and we become far more receptive to interaction with people. So, all of the discussion about brainstorming, and the ways that people feel that things are flowing, really moving in a group through working together, is in part because of a physiological change that takes place in our brains. It actually opens up more space in the decision-making, or control operations part of our brains. And that opened up for me a really fantastic way of thinking about this because—and as an architect this reinforces something I believe in—face-to-face interaction [is important]. And [Jim] hasn't gotten all the way there yet, to look at social media and how long-distance or remote collaboration has the same effect, but there is something about an embodied, physical existence that's part of this. So the space matters, the bringing people together and collaborating matters. There's something to reflect on when collaborating, to sense that change, that shift when in a group and that interaction can take place.

**Elaine Martyn:** I was just going to say that at the Global Fund for Women, we have this terminology about shared leadership, and what does that really look like. I've been there for two and a half years, and we've been trying to write a document about what shared leadership looks like, but because everyone contributes to it, we're still working on it [*laughter*]. So, it's a

classic example of this. There's a colleague who had worked there for 8 years, and very proudly on her last day she said 'I'm so proud that I've never written something by myself at Global Fund' and that was great. I think that it creates a different set of principles because you're not working so much towards the goals, but it's about the process as well, and people's vulnerabilities come out. And there's a different kind of engagement along the way. We have a practice at the Global Fund which is called Pause Week, and it means once a year everyone in the office is required to be there—no one is allowed to travel, which at Global is a big deal because everyone wants to be out in the field—and no one can check email, it's a big group meeting. All 50-55 of us in one room for one week of thinking, creating, and it's very multi-layered, and a lot of the strategy is driven by the more junior staff. They're looking through a different lens. 99% of the time the leadership is driving the agenda, and Pause Week really creates a space where the emerging leaders can drive the conversation and bring forward different ideas. It's been really interesting and now it's become a bit of a competition about who can make the most fun presentation. We had our Pause Week three weeks ago, and my motto is 'putting the fun in fundraising,' so I created this mock bingo game and it was extreme! But that was a way of opening up the conversation and it was an interesting way to think about collaboration, not just across disciplines but also across levels of hierarchy.

**Ico Bukvic:** Many years ago I was trying to figure out how to acknowledge what I was really passionate about, which was collaboration. I decided to Google the word collaboration and interestingly enough, two definitions popped up. One that I can only paraphrase but one that we can come to expect, something to the effect of 'two or more carbon units working together towards a common goal.' And the second one, which was more eye opening is 'fraternizing with your enemy' [*laughter*]. I think in my experience collaboration can be very rewarding, very painful, very hard, and I can't think of anything easy, but I think that's a good thing. What's very fascinating to me is that when you look at the outcomes of these collaborations, sometimes the ugliest ones bear the best fruit, and so it is the process in which someone simply has to relinquish their own ego and transfer it onto the deliverable and the process itself. One thing that I've found particularly powerful at Virginia Tech's Center for Creativity, Arts and Technology, that I'm part of, is this level playing field—this space where anybody can come in and present their crazy idea and not be laughed at because of it. And I think that's

been certainly a liberating aspect of my experience there, but I think ultimately, it's an incredible ride. It's one of those things where you're so passionate, and then you kind of get slapped in the face because something just didn't work out, and then you come back asking for more. Maybe a part of that—and perhaps I'm segueing into a conversation about failure—but I also looked up some really good quotes about what failure is and one of them is 'failure is the mother of success' and I thought about that and yes, it is a mother of success, but only for those who persist. And maybe that's implied in the quote, but for me, that's a very important aspect, the driving force, of collaboration. Persistence and unrelenting passion is what makes collaboration successful.

**Srinija Srinivasan:** Can I just add that, especially hearing from you Ico on how hard it can be, and from you too Elaine, part of my thoughts about collaboration and interdisciplinary/multidisciplinary approaches come from a 30,000 foot level because I've seen the fruits of it, the benefits of it, but it's hard to make concrete the magic that happens at these intersections and at these contrasting points. But one concrete thing that has become really clear to me, is that it's just not a matter of letting go of ego, which it is—Bruce Lindsey in his talk the first night referred to 'radical humility'—and I think that that's profoundly true. Collaboration when done right requires radical humility. But if all you get is a bunch of people who are radically humble, there actually does have to be some process, a meta aspect of driving, managing, coalescing and moving something. And that role, if you're willing to do the work, if you're really willing to roll up your sleeves and do that work, is invisibly very powerful. At Yahoo!, I was ostensibly in charge of a whole array of editorial policies and policy in general across the company that were very horizontal in nature, meaning that in any area that you worked in, from Yahoo! sports to search to news, you were beholden to these central policies. So on paper, I was in charge, but in practice I owned nothing because I had no actual authority. The authority was in the hands of all of the owners of the business units—the people that drove the business that had to deal with the P/L and so forth. So it was all about exerting influence without authority, and I loved that. And to me, that's the essence of collaboration. It's a great exercise, because it's so much more rewarding when people come along with you because they believe in the idea rather than because you said so. It's such a cop-out right? But what it meant was, I was assigned the task, I got the right, the responsibility

of being the coalescer. And I came to understand that it's a big responsibility because you'll get shot down if you don't do it right. People will just say, 'no that's not how I see it,' but if you can be effective in that, you can shape and frame the conversation, you can shape and frame the trajectory. So we had a really simple formula—no matter what the issue was on the table, whatever we were trying to address—the task at hand sounds really simple: Provide a simple executive summary, an overview of the situation; what's happening, what's the problem? Second, options. What are our options? With pros and cons. And third, a recommendation. That was it. For everything, that was the deliverable: overview, options with pros and cons, and recommendations. And it sounds deceptively simple, but it's really really hard. All of the hard work comes in first in how you frame the situation. And you have to present it in a way that is neutral enough and everybody agrees that yes, that's an accurate representation of what it is that we're facing. The options, it's like Goldie-locks and the three bears: you have three options—small, medium, and large, you know? Too much, too little, just right. How do you frame what the options are, and then how do you characterize what the pros and cons are of each one? And that should lend naturally to this climactic recommendation and everyone goes 'ah, resolution. Yes of course, that's the right one.' But if you care deeply about something, and you want to advance your agenda, be willing to do the work that requires you to roll up your sleeves. The work that's not always sexy and not always appreciated—the work of the coalescer. It's the 'catbird seat'—an opportunity to frame.

**Bill Sherman:** That's great, it's a really important role and it actually requires having that kind of conviction and passion that we often don't associate with humility, but you have to be willing to in a way, let go. There's a famous quote often associated to sometimes Truman, sometimes to some head football coach, but it actually comes from a 19<sup>th</sup> century English poet, that 'it's amazing what you can get done if you don't care who gets the credit.' And there is a quality of that when coming together. But part of the obstacle that you're trying to overcome with inter-collaborating in a way where you're truly collaborating with people from different backgrounds and different places, is that people come from different language worlds. People come with very different mental models of how the world works, and overcoming that distance requires some level of facilitation, it requires that kind of passion and drive to move past those differences, and to recognize where those differences are obstacles, and to try to



find the opportunities in those differences. Sometimes just in the two meanings of the same word or the attempt to explain to someone who's outside of your own field what you're working on is difficult because you have a whole different language that may not be comprehensible to them. It forces a sort of self-recognition and need for clarity. And so the facilitator's role that you're talking about is absolutely critical. It's interesting because in university settings, they're not always there. We're designed this way [vertical/top-down] and most big organizations are too. And the job of making those lateral connections has to be done self-consciously. There has to be someone to take that on as his or her passion. And I have to tell you, it's a role that I've kind of landed in, it's one of the most exciting roles you can have because your boundaries of understanding are opening up through these intersections with people from so many different backgrounds and so many different worlds. And to see what happens when you can get very different people together in the same room talking about something is remarkable, and there's not always tangible success necessarily, and there is a lot of possibility for failure, but just that process opens up an incredible number of possibilities. I think historically that's been a role of artists, writers, and others who think and translate and operate in ways that are risky, and they often see possibilities ahead of those who may be enmeshed in another kind of goal-oriented task in specific domains. You see that throughout history where certain intellectual movements or discoveries are pre-figured by works of literature, paintings, sculpture, or music that start to suggest another possibility for the way the world might be organized.

**Elaine Martyn:** And just one more thing, bringing those ideas together, is that I think beyond the facilitator role, the facilitator has to have some checkpoints for those who are engaged. So, we talk a lot about high-performing teams and is there a mechanism for stepping up or for stepping back, and for the stepping back piece being able to call out someone who's taking up a lot of the air time or the space and saying actually, we need to go somewhere else, or there isn't that need to delve so deep into the nitty gritty of something that you're so passionate about that actually isn't getting us to where we need to go. I think that piece is a lot of where the tension comes from, but also where the critical shift in the conversation can lie.

**Ico Bukvic:** I think in some ways I'm living proof of this idea. I come from a part of the world where the glass is half empty rather than half full, which is not to say I'm from a place that is necessarily negative, but I think we approach problems by identifying them first. Some people expect in conversations, because of their cultural background, that when you criticize something you also want to immediately provide a solution, whereas in other cultures, you identify problems because you want to discuss them. Sometimes that can be perceived as well why don't you provide a solution? And you know, maybe I don't have a solution, but the very idea that I'm pointing this out means I'm trying to make a case for it. But it's also interesting to see how that plays out in language. So to give you an example, there's a wonderful contrast between the Croatian way of talking about a particular style of art and the English way. So I'm sure you're all familiar with the concept of still-life painting, right? Well, in Croatian, we call it 'dead nature.' So, there's nothing negative about that at all, it just is what it is. Apples on a plate? That's not very alive let me tell you! *[laughter]* The bottom line is that having the ability to understand those differences is important, it's something that's just there—and they're not malicious or maligned, they are systemic from a culture. I think that's one barrier that very commonly crops up in the kinds of interactions that I've had. But another issue is language as a disciplinary language. I had some really interesting conversations with some of my HCI (Human Computer Interaction) colleagues where basically we started talking about a project that involves sound, visual processing, and so forth, and they kept using the term 'cadence' as something they were musically referring to. And I kept telling them, you don't know what cadence is because you're using cadence for something completely different. And so I think it is interesting that there has to be some level of common language. What I often do during collaborative work and when I try to take on the facilitator role, is I'll go to the board and say okay, let's put terms on the board that we're going to use as part of our research and somehow try to draw parallels. It's really interesting to see how sometimes the ideas mesh quicker because we have this little dictionary that we can all refer to and with which to correlate ideas. Sometimes it's truly little, silly things that can make or break it [a collaboration], and I think striving to anticipate some of those obstacles can really help in the process as well.



**Tony Kolenic, a2ru Interim Executive Director:** I'd like to follow up with a question if you don't mind. Given the intense difficulty of the negotiation between that passion and humility (you mentioned in these dense situations where people are speaking different languages) and given the problems we haven't even defined yet, how does a group go about defining a singular idea of success, especially if people have different standards or goals? And secondly, given the arduous negotiations and numerous iterations, how does one stay motivated and stay passionate? What works?

**Bill Sherman:** I think it may be a little bit of a cliché, in terms of process, this reference to improvisational theater. There's a technique or a method in terms of keeping things going and actually bringing people into some form of divergence around a goal. It's a strategy in response to everything people are saying out loud or thinking to yourself: 'Yes, and' as opposed to 'Yes, but.' And if you think about what 'Yes, but' means, it's like I'm going to be polite but I'm really going to shut this down. And 'Yes, and' means I'm just going to accept what you say whether I agree or not and I'm going to build on it and possibly take it to another place. When you have a group of people working and thinking that way it does tend to lead towards some kind of divergence, or at least the construction of something that no one would have done on their own. Whether they agree with it or not, there's a willingness to... it's a little bit like governing by consensus versus governing by democracy. Instead of making a yes-no vote, having winners and losers, consensus is really when a group comes together, and those who are not getting their way are in a position that they're being forced to say no, but they're simply accepting the consensus of the group. It may not work on a national level or all group levels, it does lead to a very different dynamic that doesn't polarize a group into winners and losers. Those kinds of techniques can help work towards some kind of common goal, as opposed to just remaining in a disputed fragmentation of different ideas, and it allows people a mechanism to really share thoughts. So it's something to think about this afternoon when you're working in your groups. To not start out by saying 'Yes, but,' and instead say 'Yes, and' and then build on what the last person said, and incorporating that into wherever you're going. And it actually works pretty well, it's a pretty amazing thing to watch and participate in.

**Srinija Srinivasan:** I just want to add that this is a squishy topic because the temptation is to say, well let's just clearly define what our goals are, let's come to a shared consensus about what success looks like. We can just all decide that yes, we're done. It doesn't really work that way or rarely works that way, so it's nice to try. It's a good process, a rigorous process to try and set up in the beginning because you've got to start somewhere. You need a straw man to react against, but then that's just a straw man to react against, and you see how things unfold. What helps me is more of a visual thing. It keeps me motivated, it keeps a sense of perspective for things that may not be so satisfyingly tangible that 'we made progress.' Which for a lot of these things, they're hairy, they require more than one human. There's something intrinsic about it that makes me feel intractable. But for some reason, you've got a coalition of the willing that's trying, you know? So I think about the knotted balls of string or one of those knotted necklaces. You don't unknot the necklace by 'solving' the knot. It's not a mathematical [endeavor]: 'this is the knot, and here's how to untie the knot.' You play with it, you manipulate it, and you kind of poke at it. Sometimes you make it worse and sometimes you find something that makes it better. And then the knot solves itself. You don't know how you solved the knot. And I know sometimes we reach a place that's sticky, where we take a step back before we take a step forward, but that just helps me. I think about that, it's comforting, that this is an exercise and we're just untangling the necklace. It's not linear.

**Elaine Martyn:** To build on that as a practical example, we worked on a fundraising initiative with a corporate sponsor and they challenged us to think really differently about success because they were like here we are, you've reported to us that as a result of the funding we gave you, you were able to train 700 midwives. And they said, is that a success or a failure? And I was like, 'what do you mean?' And they said, well, were you trying to train 500 or a 1000? And to have the conversation with them to say we weren't actually seeking a number, that it was much more about a trust-based process where we asked the local leaders in the community what they really needed and what felt right for the community. And getting them out of the traditional thinking of what the goal might be or what the numbers might be and more about the engagement with the values that might be associated it was a really challenging process. By the end they were like 'I think we get it and we can try it again next

year and see if we can get somewhere else.’ So that was an interesting kind of shift to be able to get to.

**Ico Bukvic:** And maybe one more practical aspect of this is also, as I age, my sense of pace changes and I think that’s the most critical part of trying to be ‘mutual’ in collaboration. When I was younger I felt there was so much energy and I really wanted to see things through quickly. And sometimes, more often than not, it’s better just to let things take their own course and somehow things will come back to the place where they need to be. Just giving an opportunity for collaborators to express their own ideas and thoughts. There has to be a level of trust and ultimately knowing that everybody is there working on a common goal, everybody’s there wanting to succeed will bring this to a place that will be favorable to most if not all.

**Stephen Hinton, Faculty Director of the Stanford Arts Institute and Arts Initiative, Stanford University:** So Bill I was struck by your comment about credit and that there’s a certain poetic justice in not giving specific credit to the poet who was talking about not giving credit. *[laughter]* Maybe the ultimate impact is precisely when people don’t know who is responsible for something. But we do live in a society that likes to give credit, and even a portion of blame as well. And there are all kinds of institutional structures that don’t necessarily pertain to other cultures (they do up to a certain point). A lot of cultures we know have patents and copyrights, and they all seem to—at least in higher education—give people grades, things have to be scored. But there are cultures where it’s slightly different. I lived in Germany for a long time, and in the humanities, there’s a lot of institutional funding for collaboration. So there are projects where they have common themes that they work on, and people are invited to contribute. So it’s kind of built-in interdisciplinarity. I’m interested to hear from the panel what institutional changes you think will be desirable in this country to promote the kind of work where credit becomes de-emphasized.

**Bill Sherman:** I have an answer, but I’ll start with an observation. In so many cases where we look at where major breakthroughs happen, it’s by people who stepped out of the institutional structure in some way. Whether it’s the dropout who started a major company or a scientist

who stepped away from the mainstream consensus of their discipline (and sometimes with a lot of pushback). Like if we look back at the history of what happened to geology when plate tectonics was first proposed as a theory. It happens very often; that the breakthroughs happen when people get outside of those institutional structures or the systems of evaluation—and, more often than not those structures are about reinforcing commonly held consensus rather than encouraging a breaking out. Like in academia, we have a thing called tenure that is supposed to protect academic freedom. There is no structure in academia more constraining to academic freedom than the tenure process and getting tenure, because one has to conform to the norms of the discipline to be able to succeed in that system. So it takes courage, it takes being willing to actually follow a path of, or the dynamic of the group that's taking you there. And creating space for that in any industry or institution is both difficult and necessary, and it really does require a kind of leadership that respects the possibility for failure, not measuring everything in the short term, incrementally all along the way, but actually giving some space for long-term development and success and creating pathways that are not necessarily part of the linear institutional roadmap. Stephen I think you're right, there is a more open discussion about the value of collaboration, about the value of multi-disciplinary partnerships coming out of the arts and humanities than there might be in disciplines that are far more tied to measures and levels of verification. They sometimes inhibit that kind of exploration and often failure is more quickly punished than it might be in a more open structure. And for those reasons I think there has to be more cross-pollination within institutions, within universities, across the disciplines to open up that space in some ways, where it's actually harder to find if it's a success or a failure, where actually being able to open up that kind of discussion is more productive for everyone.

**Ico Bukvic:** There's also some low-hanging fruit that I think could be addressed fairly quickly, all positions willing. For instance, things like just cross-listing classes and giving full credit are just as important as these higher structures—even though higher structures are the ones that drive a lot of these changes. Just finding ways to encourage faculty to teach courses that don't just serve students in their own departments but to do everything across the board. I feel like when I came to Virginia Tech, initially I felt that maybe I didn't do the right thing my opening my class to all majors, and that fear came primarily because of that fear of tenure, you know?

How would this be measured? But I chose to go ahead and do it anyway. And it certainly has had its high points and low points, but it's also inherently hard to have a situation where you have people from various backgrounds trying to teach a high-end elective and trying to find a common playing field. There are a lot of challenges in it, but ultimately in my opinion the rewards greatly outweigh the hurdles. And like you said, there has to be some long-term trajectory.

**Srinija Srinivasan:** I don't have an answer, but I have some thoughts (and maybe some kind of skepticism). I don't think there's a way to do it systematically. It being change or structures given the water we swim in, culturally so to speak. I don't know if there's a systematic, scalable way, a prescriptive way to change people's need or desire or wish for explicit credit, but I think that what is scalable is individual attention. Each of us attending to ourselves and the people around us, and the people we're responsible for, the careers we're stewarding, the people we manage, the people who are our managers—how do we serve what they need? And our collaborators. What is scalable is that we can take some portion of ourselves to devote to that idea...because I think what people do respond to are boundaries. They respond when they take the time to think about what really matters to them. They ask, 'what is of deepest meaning to me?' 'Is this enterprise in alignment with my values?' We just don't take the time to think about these things. We think about whether we got the three cookies or the 2% raise. When do we really think, 'what actually matters most?' 'What is actually enriching my life, and is this in alignment with it?' And when we're explicit about that, you just can't wrench me away [from the project] because what could be better? As long as my basic needs are cared for—I mean I have to have enough money, enough things, I mean, I don't want to be punished. So I think what we can do maybe systematically or better, at least institutionally, is inspire and promote explicit conversations about values all the time to connect these dots. And for me, the environments I've been in where collaboration has been consistently successful and consistently soul-filling are the places where we don't lose sight of that. So there's kind of this recursive thing, the best way to have an environment where credit doesn't win the day or people who need the credit don't win the day is align yourself with people who don't need credit. So it starts with if you're a hiring manager, find people that don't have that as their

highest need or wish. But how do you get those people? How do you cultivate a culture of those people? I think you speak to deeper issues.

**Elaine Martyn:** The founder of the Global Fund for Women, Anne Firth Murray, decided to come and teach here at Stanford in the Human Biology Department after she left Global Fund. She teaches human rights courses in the biology department, and a few years ago she started teaching a course called 'Love.' And she was like 'I'm so California' *[laughter]* but I think it's quite telling that the course has been full every semester, and I think it's quite interesting that there is a way of 'grading' against love that still is value-based but also engages with a different kind of conversation.

**Stephen Hinton:** I think that course competes with the Sleep course *[laughter]*.

**David Ehrenpreis, founding Director of the Institute for Visual Studies and Associate Professor of Art History at James Madison University:** I had a question that ties to what you've just been discussing, and there's also the question of two different models of collaboration. There's problem solving, but then there's the notion of OpenGrounds and place. And I'm wondering particularly about space and place. So yesterday, we're in the d.school. The d.school is centrally located on campus, it is an open space, everyone can go in, there are entrances to the building from all sorts of different angles, there are two different levels, people can stop in, they can look down from above and see what's happening, there are conversation nooks—obviously there is a lot of Eames there. So the space itself is both incredibly located and also incredibly designed, and one of the enormous challenges of the university, any university, is that question of space and place. And in most universities, all of these people are not in one building, they're in 900 buildings and they're all over campus. And I think you're right *[Srinija]* you have to go outside the system, you can't scale innovation. But one thing that does seem to matter a lot is having a place. And so the question of creating that place is something I've been thinking a lot about in my institution. So what I want to know from all of you is the role of place. How it works in a corporation, at the university, in a collaborative enterprise? Can you give a percentage in terms of how important place is for collaboration?



**Srinija Srinivasan:** Well the percentage for me is inversely related to how well everyone already knows each other. Because you still can be productive in your little isolated silos if you start from a basis of familiarity, friendship, trust, where you might think to reach out to that person, you might think to schedule a conversation, you might think to pick their brain. But that's harder at a place like Yahoo! where in the first couple of years we would double in size every month. Everyone is new, everybody is always new! When you're small it's great, everyone has to walk by each other when you have to go to the bathroom and to the lunchroom. Whether you like it or not, you're in an exit, not in a cul-de-sac. In terms of space and place, absolutely it matters. I mean people would engage in holy wars when it came to which building you were going to get moved to—you know, if they were going to exiled out to Timbuktu or they're in the middle of the action. *[laughter]* And it's a sign of how important you are if you're in the middle of everything or if they say 'we can just let you guys be over there.' There was a big morale hit when my group got moved to the new building. It's the new building, that's cool, but it's now not where the cafeteria is. Turns out it was awesome because we had this enclave, this safe sanctuary where we got to be us, we got to be quirky, we got to be weird, we got to decorate our cubes—surfer land! It ended up being a good thing that we couldn't stay there all day, we had to move to get to the cafeteria and meetings, which created currents and traffic, which creates serendipity—and those serendipitous moments lead to new ideas. So I think it's a combination of having a little bit of your own space where you get to explore and express your identity, and having to get out and create those currents.

**Bill Sherman:** We're trying to remap the university as a network, and it's more about the connections between places. This is an idea that actually came from a group of students. I designed a place at the University of Virginia at the Architecture School, and the Vice President for Research saw it and said we need more places like this at the university. I said well, why don't we do a design studio? A group of students then came up with the idea of an innovation hub, and we had a team of students working on this. And we had two women who had been there as undergraduates and they were now graduate students that said 'we don't need another building. We don't need another hub, another place like that. We need a bunch of open spaces across the university that are dispersed, that are designed to encourage people to form neighborhoods that don't belong to the disciplines, they don't belong to one group or

another, but they're scattered throughout the university.' And we thought this was brilliant, for one, we didn't have to go out and raise \$20 million for a new building, we could just renovate some spaces that weren't being used. But the space really does matter in the end on a symbolic level, and like the d.school, it has to be open-ended. It can't be so prescriptive. If you notice at the d.school, everything is on wheels, everything moves and can be rearranged. I've been there 3 or 4 times and each time it looks like a completely different place. It's an idea that a building can be adaptable, like the famous Building 20 at MIT where people could actually punch holes in the building and tear it apart, and people from all over the university were working there. It wasn't an architecturally designed monument of the *idea* of creativity and collaboration, it was basically barracks, a warehouse-kind of space. There is a reason why long spaces, buildings and places that are in their second or third use beyond the one that they were originally designed for become the places where people congregate. Think of the Dogpatch in San Francisco or SoHo in New York 40 or 50 years ago—there are these places that are discovered. And as young, creative types I would look for those places if I were you, because those are the kinds of places where people are actually collectively creating a place and identity, rather than necessarily going to those that are already established and branded, and have their identity fixed for them. And that's where stuff is happening—because it's the act of making place, rather than just moving into it, that is where the creativity really occurs. That's why it's so important to be able to transform your work place or being able to redesign things and make things flow.

**Student:** Based on that, would you be for moveable buildings? I mean if this building could move every three months, what are your thoughts?

**Bill Sherman:** My first quick answer would be that we still need to have something to bump up against and something that provides resistance. There's nothing more boring in architecture than a room that's designed to be a multi-purpose space. I mean, we're in one right now. But there does have to be resistance, because it's just like putting constraints on a question, they actually become the instigators of the creative ways of getting around those obstacles. So there's a limit to the flexibility.

**Student:** So I think that this discussion has been a lot on academia, and I think that we're coming from a fairly privileged place. We're all students, either graduate or undergraduate, and I was just wondering how we can facilitate collaboration and interdisciplinary work and creating that passion in underprivileged communities. How are we going to bring what we're talking about here to people who are actually going to need it? Especially when they're worried about where they're living. How is this relevant to them?

**Elaine Martyn:** Well, that's what we do. And I think some of the core principles around which we look at grant making and engaging with different communities have come about through realizing that there has to be a community-based organization to do the heavy lifting. So we fund women-led community based organizations that are working on human rights issues. I just got back this week from Burma where there were amazing groups we worked with, and we were doing an assessment on whether we need to look at funding multi-sector or even male-led organizations. And so we met with a bunch of mixed groups, and what we found was in those communities where we actually brought men and women together, we noticed that the women took a back seat. And we were told that Burmese women were naturally shy, and of course when we pulled the women out for a separate meeting, they were absolutely not shy. And so one of the things we have to look at is cultural context, and find out what are the basic needs of a local community first, and even simple things like we always say 'oh (especially coming from the Bay Area) technology is the number one thing that needs to be pushed out into communities.' And if there's no consistent internet, is technology [laptops] the number one priority, or is radio [to communicate messages]? The other thing to keep in mind is remembering that there doesn't have to be a solution that is pre-determined and that the solution can be generative. And there can be a completely different direction that you end up going in because of the process. A classic example is that we all know the three women who have won the Nobel Peace Prize. They all started out as grass-roots activists, they all intended not to win the Nobel Prize, but to bring peace to their local communities and give voice to the women in their villages. They ended up [accomplishing things such as] ending the war in Liberia and winning the Nobel Peace Prize, so there are these multiple benefits that can come out of gathering spaces and conversations.

**Student:** I just wanted to mention something, because it's been a topic that we've discussed a lot. How do we help them collaborate? Guess what? They know how to collaborate much better than we do. They do more with less. So what we should notice is how are they collaborating. Because they have skills, especially social skills that they need in order to be able to work together that we sometimes lack. When we collaborate we think we need extroverts. The truth is if you get more than one per team it can fall apart. What about the introverts? What about the people who are slow to collaborate, but really have some input to give? You know, they found that people who are much more socially sensitive increase the collective intelligence of a group, but you have to be able to let them talk and also let them do what they do [stay quiet] as well. Sometimes we have to understand our own cultural biases.

**Bill Sherman:** It's kind of a mantra for us, when we're doing work outside of the university, and working with community organizations (we probably have more to learn from our partners than they have to learn from us), we try to come to some sort of common understanding and perhaps help bring resources and other perspectives. But the way of working has to remain in the cultural terms and with the skills that are already there.

**Student:** Going along the same lines that you mentioned, I think it's common that designers and creative types are actually more socially sensitive and introverted, but that seems to go against the grain in terms of this idea of collaboration. Because sometimes it's a big overwhelming obstacle to overcome when you're trying to participate in a collaborative environment. So what do you think are some of the best methods for balancing introversion while also collaborating?

**Elaine Martyn:** So I can talk about this through my fundraising team. There's a website called *Asking Matters* where you can take a two-minute quiz that can tell you what kind of fundraising personality you have. I obviously was a go-getter, really wanting to be out there, with lots of energy and lots of ideas. And when I did this with my team, most of the introverts ended up being what they called Mission Control. So they're the people that actually keep you on track, have the milestones that are helping to engage people on the team, actually creating a methodology for getting something done, and recognizing that within our 15-person team,

everyone had a different place on the quadrant. So part of it is making sure that the introverts are not being squashed, and making sure that people like me are not taking up all the conversational space. *[laughter]* You know, I just spent two weeks with a colleague who claims she's an introvert, but she's quite passionate about the work that we're doing so she doesn't have a problem speaking out because she doesn't want the opportunity to be lost.

**Bill Sherman:** There is no one-size-fits-all. You know, a lot of studies about collaboration point to needing the variety, needing the range of types. I also jokingly always say, 'never underestimate the power of passive aggression.' It's amazing to watch how it operates in a group. Sometimes it works in really negative ways, but sometimes it works in interestingly positive ways. But you need the multiple types. There is no one-size-fits-all. There used to be the idea that we all need to be in big open spaces, open work places—but that doesn't work for everybody. People work differently, and think differently, and we're much more effective when you get the mix of those different ways of working. When people have their own space, those who may be quieter in the conversation actually have the time or the space to think before joining the collaborative process. But that does require a facilitator or someone who can make that group possible.

**Elaine Martyn:** And also so that all the decisions aren't made in the conversations.

**Ico Bukvic:** Also what I think is really interesting is that I consider myself a former introvert. But I think things that have helped me get involved more in these kinds of activities are the passion for things that I have done on my own. I think a lot of those things can organically happen as long as you have a place or facility. Like what we were talking about before about space. We have these things called community play dates. On Friday morning we get together and we invite everybody to just come by, talk about their own work, we have structured presentations but it's mostly just hanging out and sharing ideas. And it's interesting, there will clearly be projects and individuals who will not be interested in doing anything *[collaborating]* but there will be other times when they want to tackle projects that they can't do on their own. And the next time we get together they'll be able to identify people who they will be comfortable with and who they can start collaborating with. It might be a really small

collaboration in the beginning, but slowly it comes together—it's almost like building up stamina for these kinds of efforts. Like we said before, this is hard, it's an exhausting process. So there's clearly a pathway, but it's something that cannot be forced. So it's really about providing the place and providing the tools for things to happen—I think that's the best way to approach it.

**Lauren Fretz:** I wanted to ask you all about money, because to actualize a lot of these projects and collaborations you need funds. So who holds the purse strings in your fields and in your work, and how do you navigate and sometimes compromise your vision for making something actually happen?

**Srinija Srinivasan:** So what I'm doing these days is a startup in Brooklyn devoted to music, and basically what we're saying is 'they're doing it wrong, we want to do it differently.' So who holds the purse strings? Well the ones who are doing it wrong in the music industry currently—really the advertisers. And it's really quite ancillary and irrelevant to the question of how we create thriving communities of artists and audiences. Because what an advertising-based ecosystem cares about is 'how do we get more stuff to more people for free or as cheap as possible anywhere, anytime?' So the central question that I'm interested in exploring is: 'that's broken, what about this?' Remember what it was like when we had direct engagement between artists and audiences? Assigning value where we found value? The human, ennobling task of saying 'I like that and I want to invest in that' instead of being like arrested-development teenagers who are always living off our parents' dime because they're going to pay for it and subsidize it and we just get more free stuff. It's not an uplifting, human feeling if you stop and think about it. So who holds the purse strings right now is not going to be sustainable or useful. So what we're trying to do is tell a story, is to reveal or surface the stuff that we're not thinking about that we're not paying attention to, that we unwittingly let the entire music industry be co-opted by non-music companies. Yes, it feels good to get stuff for free, but you have to think about at what cost? So we're trying to change that holds the purse strings, and it starts by revealing how it works now (or doesn't work now), and then offering an alternative. So for us, that's the whole challenge.



**Bill Sherman:** It's interesting, as an architect, I've almost never worked on a project that had a large budget, so the whole mindset is how can you use what you have in the most minimal way to accomplish the most. And there's an amazing amount that you can do to reorganize and change people's perceptions of what you do and to change their perceptions of a place for almost no additional money (if you're creative). Once you've done that, you can demonstrate the value of what you've done, then there's a chance of redirecting the funding and redirecting the flow. But in some ways, if you think that you're going to change the paradigm and you want to do something differently, don't expect anybody to pay for it. You've got to demonstrate it. It's the same thing as the prototyping that you all did yesterday—you've got to do it on a small scale to change the paradigm, and then to show the potential of what that change is. It's amazing how much attention you can attract and gain impact for almost no money if you've actually taken the resources you have and align them and represented them in a different way and shown the different possibilities. So I always like to put the funding question second, because for anything that's breaking into new territory (which at some level, all of us want to do—we think that there's something wrong with the way something is done and we want to change it). We can't expect, due to the way society is organized, that funding is just going to go towards those things that are not necessarily in the interest of the purse string holders. But you can change a lot with very little, as Elaine pointed out in her discussion of the women who won the Nobel Prize. These were not people who were doing it for money, and the money followed later, the recognition often follows later.

**Srinija Srinivasan:** It's alarming to me how perverse people are with money. Take philanthropy, which Elaine knows a whole lot about. I joined the board of a non-profit out here, SF Jazz, and we did a capital campaign and built a new building, and you would think, well in venture capital funding, the Yahoo! world, there's so much risk tolerance, people are just placing all these bets and they have a big portfolio. Well, it's not true. To get anything funded you have to first get past the gauntlet of risk mitigators who are going to say, 'well what about this, this, this and this?' You have to be in an existing market and show that you're going to take a meaningful slice of an existing pie. And if you can't show the existing pie or the meaningful slice that you're trying to take advantage of, then forget about it. Because if you're trying to make a new pie or to suggest 'I don't want a piece of this pie, this pie doesn't taste

good. I think I can make a new pie that people are going to love' that's not something that's fundable. That's something that conviction, passion, and your own 'bootstrap' start-up mentality is going to have to do. Even philanthropy, and I found this to be sobering—you think, well philanthropy, the stuff people have left over when people have met their needs, the stuff they want to put to good use, in some ways paradoxically this group of people are more risk-averse. They want to be so sure that they're putting it to good use, so they go to the vetted places. They say 'I'll give to the place that has a track record.' It's not answering the question of how to get money, but I think Bill is exactly right. You've got to come to the sober reality that there's nothing that succeeds like success. So the question is, how do you create the thing that other people see and then say, 'oh—now I get it and now I want it.'

**Elaine Martyn:** We call ourselves alchemists because we have to deal with both fundraising (because we're a public fund), and also grant making, and so all of our grant making happens through general support grants that are restricted to supporting our core mission. It's pretty rare these days, but 75% of what we receive is actually restricted funding. And we have to turn it into something that exists as core support for these organizations. So we've actually made it one of our strategic priorities in the last three years to do advocacy around resource mobilization in philanthropy. So we're working with some of the large non-profits and some of our peer organizations, some of which are our non-traditional peers like Green Peace for example. And to say, okay you're also an important organization where there's a lot of funding coming in, but it's going only towards the work that you're doing and not really touching at all the human rights landscape, but there's a lot of synergy in what we're trying to achieve. Is there a way of collaborating and coming together? But also looking at who are those actors that get what we're doing and saying okay these people need to be coming out and challenging the status quo. The Global Fund historically has used a model of equal generosity, which means that everyone is welcome to give what they can. If you can give \$5 and that's your capacity, that's equivalent to if you're a million dollar donor and you can afford to give a million then you should do that. So pushing that model to encourage people to give at all different levels and to share that pie. It's a really challenging way of working because people don't want to go down that path. They want to know what they're funding and have some

control over it, they want to own it and how do you convince them otherwise? I think that's something we all continue to struggle with, so we're working on it.

**Ico Bukvic:** So funding wise, my experience has been in academia. For the Lenox Laptop Orchestra, the project was crazy enough and caught them so off guard that every time I approached someone to fund me, they didn't know what to say or they just couldn't say no. So we've been quite lucky, but it was also trying to see how these things can play themselves out in multiple domains. For me, some of my projects are very scientific in their nature and some are very artistic, and I tend to think of these as being a symbiotic relationship, where maybe I'm doing the next laptop orchestra and I realize I have to engineer something so we fashion our speakers out of Ikea salad bowls. So the idea is that you find that there are opportunities there for engineering, and for some hard-core science and research, which could then find a spin-off in some kind of NSF grant or similar. And on the other hand, you have an artistic opportunity to try to affirm ourselves as an ensemble, and that brings out a new layer of opportunities. So I feel that it always boils back down to the idea that 'failure is the mother of success for those who persist.' Ultimately, going out and finding the funding for what you want to do and what you're passionate about—you should simply expect not to get anything from the first hundred hits, and then the 101<sup>st</sup> one will be the one where it happens. It's interesting, I had a conversation with the Pandora Radio founder who was visiting us, and literally he said he had made 300 plus pitches, one after the other, and then finally got it. And I think it's really that persistence that makes the whole difference.

**Bill Sherman:** It's like what you said Ico, when you start working on something, and you make a decision or talk to someone and that opens up a crack, opens up a possibility for NSF. I think the way to visualize it is to think about how a river changes course. If there's one little deviation and the gravity's pulling the water in the right direction, it'll open up. So it just takes opening that small space, and if the idea's good and you're persistent and passionate, it's amazing where things can flow. It's really often about diverting the dominant flow into a direction that it wasn't intending to go. So in the university context, find people who can get the big grants and take a little piece of it.

**Srinija Srinivasan:** And the persistence, it can't be overstated. Because if it's new, you have come to it through some very peculiar life experiences and beliefs that got you to decide that things need to change. And repetition is needed. Some of us are really thick and we need to hear it 15,000 times in 13,000 different ways. We need to read the thing, we need to hear the thing, we need to hear the song, you know? Pandora's founder may not have gotten to 300 different people, part of that was probably going to the same 15 people over and over because he found a different excuse or context to explain it again.

**Ico Bukvic:** And I think that branching out is really what keeps this project invigorated and poised for growth, so I mean coming back to the example of the laptop orchestra, one of the most rewarding experiences for me was when we reached out to the Boys and Girls Club and help them with their own laptop orchestra and let them use their own instruments, and you see little kids doing it and it's great. I remember distinctly that there were moments in this whole process where I was like 'why am I doing this, this is so tiring, this is stupid' you start questioning yourself. And then something like this comes up and you see this one kid do something crazy and their eyes light up and you know that there is something going on in there, and that's very important. So somehow constantly reinventing the process is a good thing.

**Student:** I have a question. I study Computer Science and Industrial Design, so everyday I kind of find myself on both sides of the art versus engineering debate, where engineers are like 'artists are stupid, they want to put a fireplace in a bus stop,' and artists are like 'engineers like duct tape and friction.' So I feel like when you get to a certain level, there are people that recognize the benefits of each and that's where collaboration happens, but at the same time I see a lot of people make it all the way through higher levels of education still with this stigma attached with art versus science or engineering. And how do you think we can approach it to kind of remove the boundaries that people put in place around their disciplines because they think that others are inferior to their own?

**Ico Bukvic:** I think it's the issue of breaking down the silos of academia, and really working towards that goal. I think we're all part of the problem, whether we like it or not, and so we all

have to look inside and work from there outwards. I think it's something that's not going to change anytime soon, it's a laborious process. The beautiful thing about academia is also its' ugly part—it's very slow to change. It's kind of a dinosaur, but in some ways it gives us the chance to scrutinize what's out there and figure out how to adapt better. So I think it's kind of an inherent challenge, but the mere fact that we are all here today clearly suggests that there's something we want to address. And that we want to address it in a way that's most constructive, most resistant to deterioration over time.

**Bill Sherman:** Depending on the mode you're working in, and I get this question a lot, there are several different ways of approaching it. And sometimes I think the least productive is to go out and try to change everyone, to start by trying to make a structural change, to change their minds. And maybe the much more productive route is to find people who actually share values and your way of seeing, and to start working, start collaborating, and build something from the center out, rather than by starting by trying to change those who have the wrong idea. Yes, there are a lot of people who are very fixed and have strange views on everything that you can imagine, and if you have a different perspective, rather than trying to change their mind, try to demonstrate the power of the way that you see the world through the work that you do and don't worry about it. People will come along, and some won't, and you can waste a tremendous amount of energy. In academia, the amount of energy and time spent in months and months of committees to create a structural change in something that the institution is going to reject is enormous because the culture is not there yet. Make the change on your own terms, and people, the institution may follow.

**Srinija Srinivasan:** I just want to give a big amen to that because as you were asking the question, I was thinking is it really a problem? Is that really at the root of our problems, this art versus science divide? I've thought about this a ton. Stanford is known for its interdisciplinary majors, I am a very grateful beneficiary of something called Symbolic Systems, which at the time was new, 4 or 5 years new so it didn't have the cache it does now. So it was this self-selecting minority that said 'this lingo is oppressive and omnipresent on campus—you're either a techie or a fuzzie.' That's a Stanford thing, techies and fuzzies. And Symbolic Systems was one of these things that married the two. And there was a group of

people who just rejected that dichotomy out of hand. So I got to be around a bunch of kindred spirits who approached the world a bit differently. So at first I thought this needed to be solved, this techie versus fuzzie divide, but I don't know if it needs to be solved. When we think about interdisciplinary collaboration, we don't start with 'well how do we change all the disciplines?' So whatever interdisciplinary means, it assumes these pre-existing divisions, and the first task of interdisciplinarity is not to demolish the divisions. It's to understand them, to acknowledge that they are divisions, and to see where the strengths are in the intersections.

**Ico Bukvic:** And I think also there's an aspect of respect. So, it's a two-part problem. One is yes, we don't want to abolish everything and start new, but it's more about respecting both sides of the coin so that when a solution is arrived at, it is truly trying to incorporate both aspects of that process.

**Student:** I think one of the challenges between the divisions between arts and sciences in the university is the ability to cross over to the other side. So if the university has a project and they need people with certain skills, oftentimes it's the people in the sciences that have those skills and people in the arts just don't. So people that are in the sciences can cross over from their field into the arts while people in the arts really can't go in the other direction. How do you feel like universities can address this issue?

**Elaine Martyn:** When I was applying to medical school, I remember that there was this rumor that 30% of the medical students that were going to be accepted had to be philosophy majors. And it was trying to be about bringing more of the arts communities into problems solving within the scientific community. For me, as someone who has done both—Victorian literature and medicine, and now who is working in human rights, I've had to kind of insert myself where I see where there's been an opportunity to shift something. I think that pushing back and saying 'you know these are the things you say are requirements in order to solve this problem, but I see that there actually could be a completely different direction if you take this other avenue' can work. I think creating that shift is really important and you shouldn't be afraid to say that. Sometimes you're going to be heard, and sometimes they're just going to say, 'well that's not what we want.' But my first job out of college was doing French translation



for an engineering company, which had nothing to do with anything that I had studied, but I wanted to really push myself out of the medical and literary bounds and use things that I had learned along the way. And it was a great reminder of all the great things you can do that don't have anything to do with the core skills that you might have. It's about championing yourself.

**Ico Bukvic:** Again, for me it's two sides of the same coin. We obviously have to have faculty that can accept these kinds of opportunities, and allow a non-major to enroll in a class that can accommodate that kind of skill set, but I think a lot of it resides on students' shoulders to take the initiative to basically try their best to get into courses and things that they'd like to explore and sort of fight the current. It's kind of the only way right now, and hopefully in the future it won't be like that. Another challenge in this whole process is that we clearly have this left brain right brain debate (even though it's not clear cut like that, it's more like percentages), but there is a different way of thinking that I've definitely found challenging. When you do something that's very engineering-like, it is hard to shift back and forth, it's very very exhausting. But again, for students, you have a great opportunity in your own institutions to explore that and push the boundaries and see where it gets you. I think by doing so, you clearly will make yourself more applicable to these kinds of scenarios, and part of it is just going to be the kind of curriculum that's offered. I'd be hard-pressed to find any curriculum that doesn't do at least a little bit of that already.

**Bill Sherman:** I think it's also important to recognize, in whatever you're doing, whether you're an artist working in engineering, or from the sciences working in the arts, that the value of recognizing multiple ways of knowing and understanding and modeling the world, and ways of testing that knowledge—that's the greatest value. I see in many ways in the university, that it's the institution and the faculty that's catching up with the students, because I think the students do this naturally. They're the ones who are moving between departments, taking multiple courses, and I hope that your institutions don't have barriers between science students taking courses in the arts and arts students taking courses in the sciences. To the extent that you can expose yourself to as many different ways of how the world is known, through different cultural, institutional or disciplinary perspectives, the more opportunities you have to see connections, to build possible lateral connections that can really help you

break into new territory, and actually to allow you to engage larger audiences in ways that you wouldn't if you stay completely in the boundaries of one way of seeing. So for me, that's one of the biggest values of being in school is to have the opportunity to dig into something as well as do this kind of sampling exposure that is available to you that will never be again.

**Tony Kolenic:** Thanks to you all for a wonderful conversation.

*Join additional conversations on issues related to arts-integrative interdisciplinarity at the 2014 a2ru National Conference hosted by Iowa State University, November 5-8, 2014. More information can be found at [www.a2ru.org](http://www.a2ru.org).*